

## **Harpold Chaining Allotment (#00836)**

### **Rangeland Health Standards Assessment**

#### Allotment Overview

The 900 acre Harpold Chaining grazing allotment is located approximately 2 miles southwest of the town of Bonanza, Oregon. It is in an area of rolling hills on the very north fringes of the Bryant mountain area. The Lost River is located about 1 mile to the north and west of the allotment (see attached map). There is public access from the paved road that runs just off the north edge of the allotment.

Approximately 500 acres of the allotment were chained<sup>1</sup> and aurally seeded in the winter of 1969/70 to improve wildlife habitat. This was a cooperative project with the Oregon State Game Commission. The seeding mix applied after the junipers were double chained was Crested wheatgrass at 2#/ac., sainfoin at 1.25#/ac., small burnet at 0.5 #/ac., and Antelope bitterbrush at 0.5#/ac. There was also approximately 2#/ac. of bitterbrush seed applied through dribblers attached to the dozers pulling the chain. After the chaining was completed a portion of the area was fenced to exclude livestock. This approximately 200 acre wildlife area is located to the north of the present grazing allotment.

From the grazing file records it appears that the allotment was first used for BLM-administered livestock grazing in 1973 when it was grazed to allow for rest on another allotment. A request for grazing lease applications was made by the BLM for the allotment in 1973. During August of 1973, two applications were received. The District Manager made a decision to split the use on the allotment among the two applicants. This decision was appealed and eventually resulted in a decision by the Interior Board of Land Appeals (IBLA) to grant the lease to the applicant who was a contiguous landowner. Since the allotment had seen little use since the chaining, a 3 year lease was issued in 1975 with a 2 year use and 1 year rest rotation. This lease authorized 80 cows from April 10 through May 15. The early off date was designed to protect the newly planted wildlife browse species from livestock use. This season of use was followed through about 1985 with a few exceptions for late turn out or non-use. Beginning in 1986, concurrent with a lease transfer, the season became May 1 through May 30 with 100 head of cows. This season remained in effect until 1990. The lease was then transferred to the current base property owner in 1990 and has an authorized season of use from May 1 to May 30 for 97 head of cattle or 96 Animal Unit Months (AUMs). Due to various circumstances, the actual use of the allotment has varied with turnout in most years being in middle to late May and removal in middle to late June.

The allotment was visited in 2005 and 2006 to gather information for the Rangeland Health Standards Assessment using the Ecological Site Inventory (ESI) method. This inventory provided data on the current vegetation on the allotment. A map of the area

---

<sup>1</sup> \* Chaining is a process where a large ship's anchor chain is dragged between two bulldozers. The dragging chain pulls the junipers out by the roots while only doing minimal damage to the sagebrush. There is also some amount of soil surface disturbance with this activity.

was produced that divided the allotment into units based upon distinct vegetation communities. These units were labeled as Site Write-up Areas or SWAs (see the attached ESI map). For each of these SWAs, one or more Rangeland Inventory Ecological Status Worksheets (worksheets) was completed that provides information on vegetation, ground cover characteristics, production, erosion, and other site factors. The vegetation information on the worksheets was used to determine what ecological site or sites were in the SWAs. A condition rating was assigned to each ecological site based upon the site's current attributes when compared to a site in Potential Natural Community (PNC) condition. Following is a table showing the results of the ESI survey on the Harpold Chaining allotment.

SWA#	Acres	Ecological Site	% of SWA	Condition
HC1	404	Shallow Loam	100%	Poor
HC2	51.9	Shallow Loam	100%	Poor
HC3	75.9	Shallow Loam	30%	Good
		Shallow Loam	70%	Fair
HC4	41.7	Shallow Loam	100%	Fair
HC5	13.2	Shallow Loam	100%	Fair
HC6	122	Juniper Claypan	100%	Fair
HC7	38.7	Shallow Loam	100%	Fair
HC8	16.4	Shrubby Loam	100%	Good
HC9	31.7	Shallow Loam	100%	Fair
HC10	72.1	North Slopes	100%	Good

During the ESI a general overview of an allotment is also done. This can include an inventory of any range improvements, indications of recent use by livestock and wildlife, and observations of riparian and wetland conditions. The data from the ESI and field observations will be the primary information used for this assessment. Some data was collected in the wildlife area, but this will not be analyzed as part of this allotment assessment.

This allotment was visited for the ESI in September of 2005 and June of 2006. During both visits, observations of livestock grazing use indicated heavy utilization of the grasses throughout the allotment. The notes mentioned a high level of cattle tracks indicating high search levels for forage. During the September visit there were also observations of dead leaves on the Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) plants in several areas. This was also observed in other grazing allotments during this time period and it appeared to be an insect infestation.

The fences around the perimeter of the allotment were in good condition. The waterhole near the center of the allotment has had recent mechanical problems. The waterhole was originally fenced and the water was piped to a trough outside of the fenced area. The piping system is currently in need of repairs and nonfunctional. The fenced area has been opened to allow livestock access to the waterhole until the repairs can be made.

## Standard 1 - Watershed Function - Uplands

This standard focuses on the basic physical functions of upland soils that support plant growth, the maintenance or development of plant populations and communities, and promote dependable flows of quality water from the watershed.

The recent ESI provides good information for assessing the conditions of the upland soils and vegetation. An overview of the data and interpretations for each of the SWAs listed in the table above will provide a good picture of the current conditions.

**SWA HC1** covers most of the area that was chained and seeded in 1969/70. It was classified as a Shallow Loam ecological site but it likely has areas of other ecological sites that would have been more evident prior to the chaining. Site worksheets were completed in two different areas of the SWA and both resulted in a Poor condition rating. Both areas had rubber rabbitbrush (*Ericameria nauseosa*) as the dominant species. Rubber rabbitbrush is generally regarded as an early seral species that rapidly invades and colonizes disturbed sites. There was little information found in the files to indicate the vegetative conditions that were present before the chaining occurred other than statements referring to a lack of browse species and heavy juniper. One photo did show heavy juniper with some sagebrush and rabbitbrush present. Evidently, the rabbitbrush rapidly increased after the disturbance caused by the chaining. Notes from the file indicate the chaining was done during the early winter and conditions were very muddy, so there was likely a high amount of soil surface disturbance that created favorable conditions for the rabbitbrush increase. Information from the grazing files indicates that the area was not grazed until three years after the chaining. As noted above, the grazing that was authorized was a two year use, one year non-use rotation with a season of use of April 10 through May 15. This rotation and season was designed to allow for establishment of the browse species (antelope bitterbrush) and grasses (crested wheatgrass) that were seeded after the chaining. The current conditions on the allotment have very little antelope bitterbrush (*Purshia tridentata*) present, so it appears that the invasive characteristics of the rabbitbrush along with the additional livestock grazing pressures and possible climatic factors led to the current shrub levels. Mountain big sagebrush was a subdominant shrub on the site with levels a little above what would be found on a good condition site. There was also green rabbitbrush (*Chrysothamnus viscidiflorus*) present throughout the SWA.

The grass component in this SWA was composed of a mix of native species that increase under disturbance and exotic annuals. A Shallow Loam ecological site in Good or Excellent condition would have Idaho fescue (*Festuca idahoensis*) and Bluebunch wheatgrass (*Pseudoroegneria spicata spicata*) as the dominant vegetation species. These species were not encountered during the survey in this SWA. Total production on the site was very low and the Observed Apparent Trend rating was Static to Downward. At the time of the survey, all grasses were heavily utilized. The low production levels and the low populations of perennial grasses also resulted in low levels of plant and litter cover for soil protection. At the two sites where data was recorded the percentage of bare

ground was 67% and 70%. Indications of active soil movement including rilling, pedestalling, and soil deposits were observed at both sites.



**Two views of SWA HC-1**

**SWA HC2** is another Shallow Loam ecological site in Poor condition. This site straddles an ephemeral drainage and was not part of the chaining. The dominant species on this site was Mountain big sagebrush which made up about 37% of the total production. There were only low levels of rabbitbrush on this site compared to the chained area immediately above it (4% of the total production versus 46%). The dominant perennial grass on this site was Sandberg bluegrass (*Poa secunda*) with lesser amounts of Idaho fescue, bottlebrush squirreltail (*Elymus elymoides*), and Lemmon's needlegrass (*Achnatherum lemmonii*). The total production on this site was low. The Poor condition rating was a result of the low levels of higher seral stage vegetation. Bare ground at this site was 68% and indicators of active soil movement were also recorded.



**SWA HC2 view across ephemeral drainage**

**SWA HC3** is a Shallow Loam ecological site with about 30% in Good condition and 70% in Fair condition. The part that is in good condition is a rocky hilltop area with a good component of perennial grasses including Idaho fescue, Sandberg's bluegrass, bluebunch wheatgrass, and Thurber's needlegrass (*Achnatherum thurberianum*).



Junipers were at invasive levels and were beginning to negatively affect the shrubs. The surface cover was about 50% stones and another 15% in cobbles and gravels.

The portions that were in Fair condition had a lower overall production with the grass component dominated by Thurber's needlegrass with lesser amounts of Idaho fescue, Sandberg's bluegrass, and Lemmon's needlegrass. This area also had invasive levels of junipers with a high level of bare ground (62%).



**SWA HC3 Fair condition area**



**SWA HC3 Rocky, Good Condition area**

**SWA HC4** is another chaining area that was classified as a Shallow Loam ecological site in Fair condition. The dominant perennial grasses on the site were Thurber's needlegrass and Sandberg's bluegrass. About 40% of the total production was provided by shrubs with nearly equal levels of rubber rabbitbrush, green rabbitbrush, and mountain big sagebrush. There were also trace amounts of planted bitterbrush seedlings. This area had also been heavily grazed with very few grass seed heads present at the time of the survey in early September. On some of the steeper areas of this SWA, there were indications of active soil movement.



**SWA HC4**

**SWA HC5** is a smaller Shallow Loam ecological site that was rated in Fair condition. The site production was a little low, but dominated by perennial grasses with Idaho fescue, Sandberg's bluegrass, and bluebunch wheatgrass comprising about 65% of the total. There was a high level of invasive junipers that has resulted in a very sparse shrub component.



**SWA HC5**

**SWA HC6** is a rocky, juniper invaded slope with very low total production. It was classified as a Juniper Claypan ecological site in Fair condition. The dominant grass on the site was Lemmon's needlegrass with lesser amounts of Sandberg's bluegrass and Idaho fescue. Both mountain big sagebrush and low sagebrush (*Artemisia arbuscula*) were present in scattered patches throughout the SWA. There were 10-30 junipers/acre in both the 12-20' and 20'+ size classes. About 35% of the soil surface was covered by cobble-sized rocks.



**SWA HC6 Cobbley surface**



**SWA HC7** is a long narrow strip with a stand of older junipers that lies just above part of the old juniper chaining area. It was classified as a Shallow Loam ecological site in Fair condition. About 85% of the total vegetative production on the site was from grasses with Idaho fescue as the dominant grass and a mix of other perennial and annual species present. The site was almost completely lacking in shrubs with only a trace of desert gooseberry (*Ribes velutinum*) recorded. There were 5-10 junipers/acre in both the 20'+ and old growth categories and less than 5 junipers/acre in the 12-20' class. There were no junipers recorded for any of the smaller size classes.



**SWA HC7**

**SWA HC8** is a small Shrubby Loam ecological site in Good condition. About 50% of the soil surface was covered by stone-sized rocks and another 10% in cobbles and gravel. The site production was low due to the high level of rocks, but dominated by Idaho fescue. Mountain big sagebrush was the dominant shrub with scattered occurrences of chokecherry (*Prunus virginiana*), Klamath plum (*Prunus subcordata*), and desert gooseberry. Junipers of all size classes were present throughout the site in low levels.



**SWA HC8 Rocky surface**

**SWA HC9** is mountain sagebrush dominated upland with a low level of encroaching junipers. It was classified as a Shallow Loam ecological site in Fair condition. Production was moderate with Sandberg's bluegrass, Thurber's needlegrass, and bottlebrush squirreltail as the main grasses. The sagebrush level for this ecological site was a little high and it was noted that there were lots of dead and dying leaves present from an apparent insect infestation. There were active rills present in some ephemeral washes. Moderate to heavy utilization on the grasses was also noted.



**SWA HC9**

**SWA HC10** is a north facing side slope with a high level of invasive junipers. It was classified as a North Slope ecological site in Good condition. Idaho fescue was the dominant grass and mountain big sagebrush was present throughout with some dense patches in the open areas among the junipers. The grasses in this area were also heavily utilized at the time of the survey.



**SWA HC10**



The results of the ESI show that about 52% of the allotment is in Poor condition, 35% is in Fair condition, and 13% is in Good condition. The majority of the Poor condition area is within the old juniper chaining boundaries. The current conditions there are a combination of factors as outlined above. The invasive levels of rabbitbrush that came in after the chaining have influenced the current vegetation community. Livestock grazing is a contributing factor likely due to initial stocking levels that were too high to allow the grasses to recover after the disturbance from the chaining activities. The heavy grass utilization levels observed during the ESI also indicate that current livestock levels are too high. Allowing the livestock to remain on the allotment into June also has likely limited the grasses ability to produce seeds on a regular basis.

Most of the areas that are rated in Fair condition currently have high juniper densities and exhibited high grass utilization levels during the ESI. These areas had total production that was below the levels expected for these ecological sites.

Of the three areas that were rated in Good condition, two had high levels of large rocks on the surface that has likely limited the livestock utilization. The other site was a north-facing slope with a good grass component and high juniper levels.

**This Standard is not currently being met on the Harpold Chaining allotment.** The vegetation communities and populations on the allotment are not providing adequate soil protection and stability. These conditions are partly due to past and current livestock grazing.

## **Standard 2 - Watershed Function-Riparian/Wetland Areas**

This Standard focuses on the properly functioning condition of riparian/wetland areas as appropriate to soil, climate, and landform.

Within the Harpold Chaining allotment there are limited riparian/wetland areas. There are two ephemeral streams that run from the southeast to the northwest through the allotment. The longer of these two streams runs through the center of the allotment and a shorter one is found along the west edge of the allotment. They are both shown on the attached allotment map. Observations during the ESI indicated that the stream in the center supported very little riparian vegetation. Most areas of the stream bed had either upland type vegetation or a mixture of stones, cobbles, and gravel. There were many sites where sediment deposits were observed and some areas of recent stream bank and stream bed erosion. A vehicle trail runs parallel to the west stream for most of its length with portions that are in the drainage. It also supports no riparian vegetation and had many areas of erosion and deposition.

A waterhole has been constructed across the stream channel in the south half of the allotment. The waterhole was originally built with an exclosure fence and the water was piped to a trough outside of the fenced area. The piping system is no longer functional and the fence is now left open to allow livestock direct access to the waterhole.

**This Standard is not currently being met on the Harpold Chaining allotment.** The observed conditions in the ephemeral stream channels is likely due to the low levels of vegetation and litter cover along the stream channel and in the adjacent uplands. This is resulting in higher rates of runoff during precipitation events and increased sediment movement off of the uplands and in the channel. These conditions are partly due to past and current livestock grazing. The vehicle trail in the west stream is also contributing to its current condition.

### **Standard 3 - Ecological Processes**

This Standard addresses the ecological processes of energy flow and nutrient cycling as influenced by existing and desired plant and animal communities.

As noted under Standard 1 above, there is a high level of rubber rabbitbrush in the old chained areas on the allotment. This level of shrubs has had a negative affect on the other components in the vegetation community. This is evidenced by the low level of native perennial grasses and forbs present. This area had a high level of livestock utilization of the grasses at the time of the ESI in September. Continued heavy utilization of the grasses will lead to a continuance of this shrub dominance.

Many areas of the allotment have junipers present in invasive levels that are negatively affecting the vegetation. In the areas of greatest juniper density, the shrub component is greatly reduced or completely absent. These dense juniper levels are also reducing the populations of grasses and forbs in the understory. The root systems of the junipers are able to extract moisture and nutrients from several soil levels. They can also send their roots out in varying horizontal distances depending upon the density of the tree stand. These characteristics along with their ability to intercept precipitation can effectively limit the growth of other vegetation in their vicinity.

Most areas of the allotment showed heavy livestock grazing use at the time of the ESI in early September. Yearly heavy use can greatly reduce the vigor and reproductive potential of the native perennial grasses. This can result in a shift in the species composition of an ecological site. This is often reflected in a higher percentage of shrub species on a site or an increase in the level of exotic, annual grass species or early seral state perennial grass species.

**This Standard is currently not being met on the Harpold Chaining allotment.** The high level of invasive species has shifted the vegetation community compositions to species that are not providing the site potential ecological processes of energy flow and nutrient cycling. Many areas of the allotment also have total production levels that are below their capabilities. These conditions are partly due to past and current livestock grazing.

## **Standard 4 - Water Quality**

This Standard addresses surface and groundwater quality as influenced by agency actions and whether it complies with State water quality standards.

At this time, neither the surface water nor groundwater within the Harpold Chaining allotment has been listed for exceeding State water quality standards.

**This Standard is currently being met on the Harpold Chaining allotment.**

## **Standard 5 - Native, T&E, and Locally Important Species**

This Standard focuses on retaining and restoring native plant and animal (including fish) species, populations and communities (including threatened, endangered, and other special status species and species of local importance).

The juniper chaining that was done on this allotment was designed to enhance the habitat for wildlife, primarily for deer as this area is considered to be critical deer winter range. As noted above, rabbitbrush has invaded most of the chained areas to the detriment of the sagebrush and bitterbrush. As part of the chaining treatment bitterbrush seed was planted, however only trace amounts were noted during the ESI survey. Bitterbrush seedlings were also planted in a few areas in recent years, but only trace amounts of these were noted.

No special status animal species are known to occur on the allotment. In addition to deer, other animals that likely use the resources on the allotment include coyote, mice, rabbits, and ground squirrels. The shrub and juniper communities also support many species of birds, herptiles, and invertebrates.

This area was surveyed for botanical resources in 2002. Several infestations of musk thistle (*Carduus nutans*) were found on the northern half of the allotment in sections 21, 22, and 27. Two infestations of diffuse knapweed (*Centaurea diffusa*) were found at the south end of the allotment in section 28 along a jeep road. Two musk thistle and one Dalmatian toadflax (*Linaria genistifolia* spp. *dalmatica*) populations were found on adjacent BLM lands to the southeast of the allotment. Also, one population each of musk thistle, diffuse knapweed, and Scotch thistle (*Onopordum acanthium*) were found on adjacent BLM land to the northwest of the allotment. No special status plant species are known to occur on the allotment.



**This Standard is currently being met on the Harpold Chaining allotment.** Many areas of the allotment are in fair or poor condition, but they are still providing habitat for some dependent species. There are no special status plant or animal species in the allotment and there likely would not be any even if all of the allotment was in excellent condition.

### **Management Recommendations**

A juniper reduction project is currently being planned for this allotment that will be implemented in June of 2007. Juniper will be cut and piled by machine on slopes under 30%. On the steeper slopes the juniper will be cut with chainsaws. After the cutting, portions of the area will be open for public firewood cutting. The remaining piles will then be burned. Following the cutting and burning, antelope bitterbrush seedlings will be planted in selected areas. Grass seed will also be planted in some of the disturbed areas to help with restoration. It is recommended that the allotment be rested from livestock grazing for up to three years to allow the seedlings to establish and the existing native species to recover.

As part of the juniper treatment, the vehicle trail that runs along the south boundary fence and the trail that parallels and enters the west ephemeral stream will be closed. Large juniper trees will also be felled across portions of the trail and into the stream channel in selected areas to control vehicle access and provide some erosion control.

Standards 1 and 3 are currently not being met on the allotment due to the condition of the vegetation communities. After the juniper treatment project is completed, a change in the livestock grazing management is recommended with the objective of a trend towards late seral or PNC ecological status (Good or Excellent conditions). The current grazing that is authorized is 96 AUMs from May 1 to May 30. Recent use has been from mid to late May through mid to late June to accommodate the lessee's livestock return from winter pastures. A 30 day grazing period is still recommended with some flexibility in the beginning date, but the livestock should be off the allotment by June 15. During the ESI, vegetation utilization levels of 70-80% were observed throughout the allotment. Utilization levels of less than 40% would be necessary to allow for an increase in the population of perennial grass species. So a reduction in the AUMs is also necessary to allow for improvement in conditions. A reduction in the AUMs of 40% is recommended. This change should include monitoring studies to evaluate the effectiveness. Annual utilization monitoring should be done at selected key locations in the allotment to determine what actual level of utilization reduction is resulting from the AUM reductions. Study plots should be established to determine the trend of any vegetation change. Accurate records of livestock numbers and use dates should also be kept. These items would all be incorporated in a monitoring and evaluation plan to be developed for the allotment.

The constructed waterhole and associated fence, trough, and piping system should be repaired to provide livestock water while protecting the wildlife habitat provided by the

exclosure area. This could be completed during an allotment rest period or after the scheduled use period.

**Contributors/Reviewers**

Dana Eckard  
Bill Lindsey  
Lou Whiteaker  
Steve Hayner  
Elizabeth Berger

**Title**

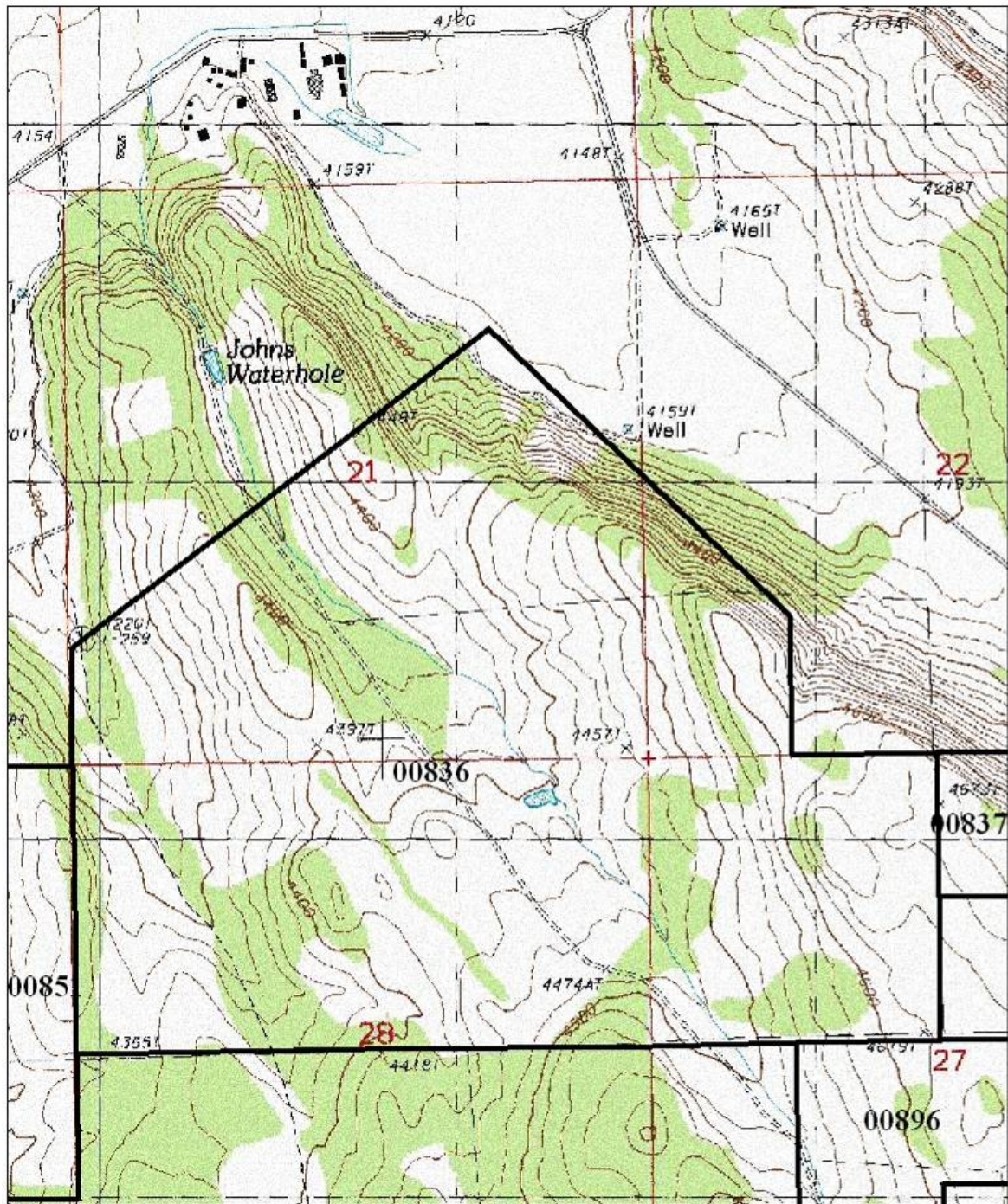
Rangeland Management Specialist/author  
Rangeland Management Specialist  
Botanist  
Wildlife Biologist  
Hydrologist

**Determination**

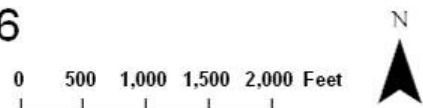
- ( ) Existing grazing management practices and/or levels of grazing use on the Harpold Chaining grazing allotment promotes achievement or significant progress toward the Oregon Standards for Rangeland Health and conforms with the Guidelines for Livestock Grazing Management.
- (X) Existing grazing management practices and/or levels of grazing use on the Harpold Chaining grazing allotment will require modification or change prior to the next grazing season to promote achievement of the Oregon Standards for Rangeland Health and conform with the Guidelines for Livestock Grazing Management.

/s/ Mike Bechdolt, Acting Field Manager  
Manager, Klamath Falls Resource Area

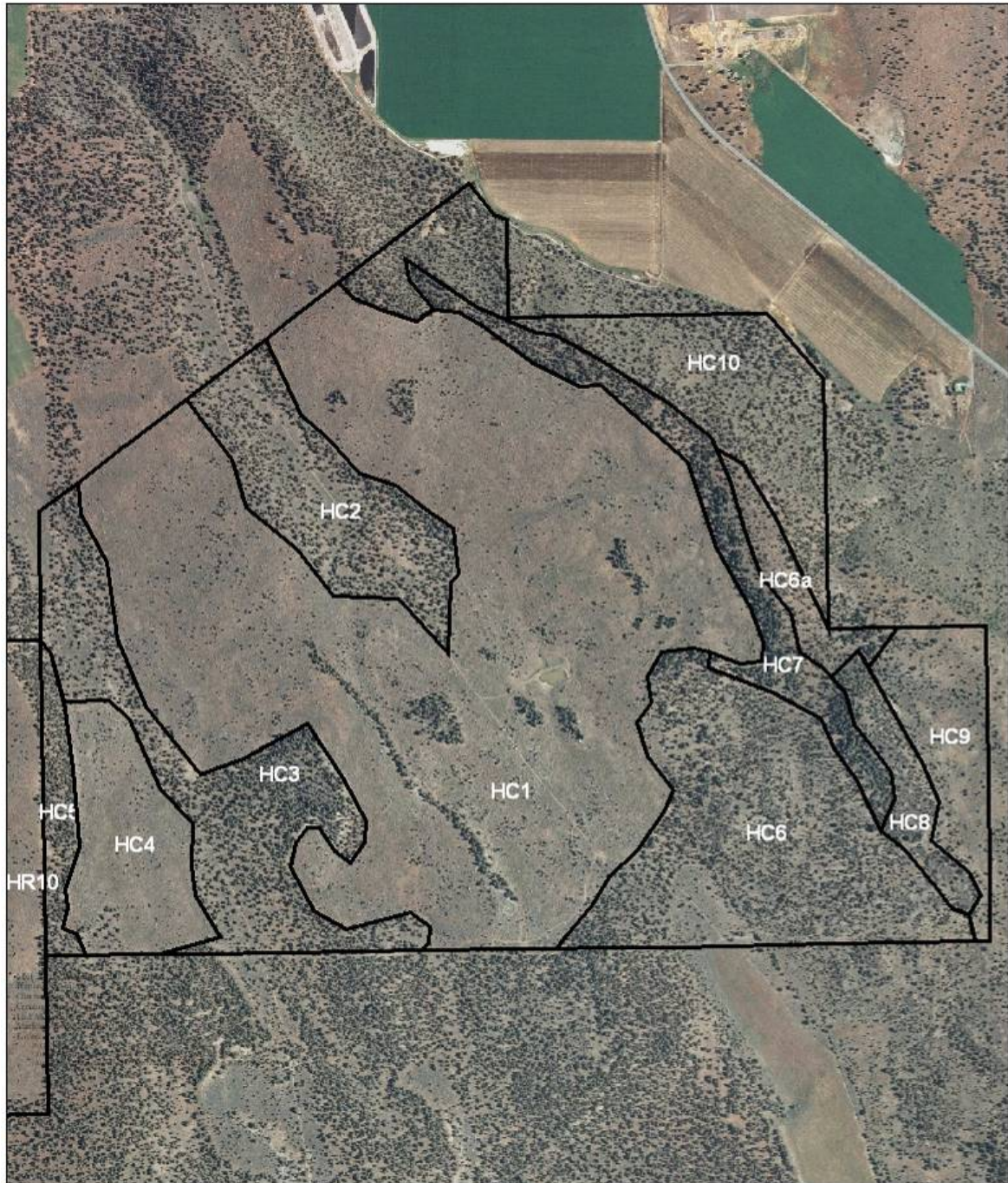
4/25/07  
Date



Harpold Chaining allotment - #0836  
T39S, R11E







# Harpold Chaining Allotment Ecological Site Inventory Map

HC# - Site Writeup Area

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for risk reduction or appropriate use. Original data was compiled from various sources. The information is not intended to be used for any purpose other than the original use. All data is subject to change without notice.

